

REMARKS

The Office Action mailed November 27, 2002, has been received and carefully reviewed. Reconsideration and withdrawal of the rejections of the claims of the above-identified application is respectfully requested. Claims 48, 51 and 52 have been canceled, claims 1, 40 and 49 have been amended, and new claims 53 - 57 have been added. Independent claims 1 and 49 have been amended to clarify the generally "I" shaped implant. New independent claims 56 and 57 correspond generally to combinations of claims 1, 40, 53 and 49, 40, 53, respectively. Support for the amendment and new claims can be found in the specification and drawings as originally filed. No new matter has been added.

Double Patenting

Claims 1 and 36-52 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over all claims of US 6,224,631. While not conceding the correctness of the rejection, Applicant will file a Terminal Disclaimer upon indication of allowable subject matter.

Rejection under 35 U.S.C. §112, first paragraph

Claims 51 and 52 are rejected as containing subject matter not described in the specification. Claims 51 and 52 have been canceled, thus the rejection is moot.

Rejections Under 35 U.S.C. §102(e) and § 102(b)

Claims 1, 36-41 and 43-52 are rejected as being anticipated by Errico et al. (5,904,719). Claim 1, as amended, recites an implant having first and second load bearing surfaces connected by a central support member, with the support member at the midline of the load bearing surfaces. Errico et al. teach "exterior side walls 108, 110 and a central bore 112" (see column 5, line 17 and Fig. 3). Thus, in the implant of Errico et al., the central bore is at the midline of the load bearing surfaces. Claim 49, as amended, recites an implant having a central support member; whereas Errico et al. has two concave walls separated by a central bore. The instantly claimed implant has the advantage of allowing for a greater volume of graft material to be packed on either side

of the central support member. In the implant of Errico et al., a significant amount of area that would otherwise be available for inserting graft material is taken up by the two side walls. Thus, Errico et al. do not teach the implant as claimed. Additionally, Errico et al. do not provide any motivation or guidance for one of ordinary skill in the art to modify their implant to achieve the instant invention. Withdrawal of the rejection is respectfully requested.

Claim 51 is rejected as being anticipated by Knothe or McKay. Claim 51 has been canceled, rendering these rejections moot. Regarding amended independent claims 1 and 49, while the Examiner asserts that Knothe teaches an implant having a generally "I" shaped cross-section; the figures and abstract of Knothe clearly do not teach such an implant. Knothe teaches the implant as having "two lateral faces (5)", which are shown in the figures as exterior sides linking the upper and lower bone-contact faces (3) and (4). The implant of Knothe appears to have an interior wall, indicated by reference number 10. Thus, Knothe teaches an implant with a cross-sectional shape of a rounded rectangle with a center wall, not an "I" shape.

The claims, as amended, recite first and second load bearing surfaces extending along a longitudinal axis from the first end to the second end of the implant body. McKay fails to teach this feature. McKay teaches an implant with first and second end pieces in the form of arc segments. First (91) and second (92) arc segments connected by a central element (93) (see column 10, lines 20-27). As shown in the top view in Fig. 22, the arc segments 91 and 92 are present just at the ends, and do not extend along the length of the implant.

Rejection under 35 U.S.C. § 103

Claims 1, 36-52 are rejected as being unpatentable over Kohrs et al. (5,609,636) in view of Steffee (5,443,514). The claims, as amended, recite an implant having first and second load bearing surfaces connected by a central support member, with the support member at the midline of the load bearing surfaces. The Examiner points to Figures 17-21 of Kohrs et al. for teaching an implant with a central support member. However, Kohrs et al. teach an implant with four threaded segments 401, 402, 403, 404 connected by rigid supports 405-407 such that the segments define the longitudinal edges

of a parallelepiped (see column 8, lines 45-51). Thus, Kohrs et al. does not teach an implant with a central support member connecting load bearing surfaces at their midline, as is required by the amended claims. Steffee does not supply what Kohrs et al. lacks. Additionally, neither Kohrs et al. nor Steffee provide any motivation or guidance for one of ordinary skill in the art to modify either implant to achieve the claimed features. Withdrawal of the rejection is respectfully requested.

It is respectfully submitted that each of the presently pending claims are in condition for allowance and notification to that effect is respectfully requested. The Examiner is invited to contact Applicant's representative at the below-listed telephone number, if it is believed that prosecution of this application may be assisted thereby.

Respectfully submitted,

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MARKED-UP VERSION TO SHOW CHANGES MADE

Please cancel claims 48, 51 and 52, amend claims 1, 40 and 49, and add new claims 53 - 57 to read as set forth below:

1. (Twice Amended) An implant for intervertebral fusion between opposing vertebrae, said implant comprising:
 - an implant body having a first end and a second end spaced along a longitudinal axis of the body, said first end having a first diameter and said second end having a second diameter wherein the second diameter is larger than the first diameter; and
 - said implant body comprising first and second load bearing surfaces extending between the first and second ends of the implant body and being spaced apart by a central support member, the central support member having a width narrower than a width of the first and second load bearing surfaces, wherein the width of the first and second load bearing surfaces extends between the first and second ends of the implant body, wherein the central support member is coextensive with a midline of the implant body extending along the longitudinal axis, wherein said body is generally "I" shaped in cross-section.
40. (Amended) The implant of claim 1, wherein said [body] first and second load bearing surfaces taper[s] toward one another from said second end to said first end.
49. (Amended) An implant for intervertebral fusion between opposing vertebrae, said implant comprising:
 - an implant body having a first end and a second end, said body having first and second load bearing surfaces extending along a longitudinal axis of the body from the first end to the second end, the first and second load

bearing surfaces having a width extending perpendicular to the longitudinal axis, said first and second load bearing surfaces having a midline extending along the longitudinal axis, said first and second load bearing surfaces being spaced apart by a first height at the first end and a second height at the second end, wherein the first height is less than the second height; and

- said implant body comprising a central support member connecting the first and second load bearing surfaces along their midlines, the central support member having a width narrower than the width of the first and second load bearing surfaces.

53. (New) The implant of claim 1, wherein said first and second load bearing surfaces form open channels on each side of the central support member, extending from the first end of the implant body to the second end of the implant body.

54. (New) The implant of claim 49, wherein, said first and second load bearing surfaces include portions of a helical thread pattern.

55. (New) The implant of claim 54, wherein said first and second load bearing surfaces are threaded from the first end of the body to the second end of the body.

56. (New) An implant for intervertebral fusion between opposing vertebrae, said implant comprising:

- an implant body having a first end and a second end spaced along a longitudinal axis of the body, said first end having a first diameter and said second end having a second diameter wherein the second diameter is larger than the first diameter; and
- said implant body comprising first and second load bearing surfaces extending between the first and second ends of the implant body and being spaced apart by a central support member, wherein the first and second

load bearing surfaces taper toward one another from said second end to said first end;

- said central support member having a width narrower than a width of the first and second load bearing surfaces, wherein the width of the first and second load bearing surfaces extends between the first and second ends of the implant body;
- said central support member being coextensive with a midline of the implant body extending along the longitudinal axis, wherein said body is generally "I" shaped in cross-section, wherein said first and second load bearing surfaces form open channels on each side of the central support member, extending from the first end of the implant body to the second end of the implant body.

57. (New) An implant for intervertebral fusion between opposing vertebrae, said implant comprising:

- an implant body having a first end and a second end, said body having first and second load bearing surfaces extending along a longitudinal axis of the body from the first end to the second end, the first and second load bearing surfaces having a width extending perpendicular to the longitudinal axis, said first and second load bearing surfaces having a midline extending along the longitudinal axis, said first and second load bearing surfaces being spaced apart by a first height at the first end and a second height at the second end, wherein the first height is less than the second height, wherein said first and second load bearing surfaces taper toward one another from said second end to said first end, said first and second load bearing surfaces including portions of a helical thread pattern;
- said implant body comprising a central support member connecting the first and second load bearing surfaces along their midlines, the central support member having a width narrower than the width of the first and second load bearing surfaces; and

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 said first and second load bearing surfaces forming open channels on each side of the central support member, extending from the first end of the implant body to the second end of the implant body.